

Title (en)

INTEGRATION OF ULTRASONIC ADDITIVE MANUFACTURED THERMAL STRUCTURES IN BRAZEMENTS

Title (de)

INTEGRATION VON GENERATIV ULTRASCHALLGEFERTIGTEN THERMISCHEN STRUKTUREN IN LÖTVERBINDUNGEN

Title (fr)

INTÉGRATION DE STRUCTURES THERMIQUES FABRIQUÉES DE MANIÈRE ADDITIVE PAR ULTRASONS DANS DES BRASURES

Publication

EP 3610215 B1 20210616 (EN)

Application

EP 18720441 A 20180329

Priority

- US 201715486724 A 20170413
- US 2018025003 W 20180329

Abstract (en)

[origin: US2018297144A1] A manifold structure has at least one flow passage and a center manifold section that has at least one machined cavity. The manifold structure includes a plurality of ultrasonically additively manufactured (UAM) finstock layers arranged in the flow passage. After the finstock is formed by UAM, the finstock is permanently joined to the center manifold section via a brazing or welding process. Using UAM and a permanent joining process enables joining of the UAM finstock having enhanced thermal features to a vacuum brazement structure. UAM enables the finstock to be formed of dissimilar metal materials or multi-material laminate materials. UAM also enables bond joints of the finstock to be arranged at angles greater than ten degrees relative to a horizontal axis by using the same aluminum material in the UAM process and in the vacuum brazing process.

IPC 8 full level

F28F 3/06 (2006.01); **B23P 15/26** (2006.01); **B33Y 80/00** (2015.01); **F28D 9/00** (2006.01); **F28F 3/12** (2006.01); **F28F 21/08** (2006.01)

CPC (source: EP US)

B23K 20/10 (2013.01 - US); **B23K 20/103** (2013.01 - US); **B23K 20/106** (2013.01 - US); **B23K 20/22** (2013.01 - US); **B23K 20/2336** (2013.01 - US); **B23P 15/26** (2013.01 - EP US); **B33Y 10/00** (2014.12 - US); **B33Y 80/00** (2014.12 - EP US); **F28D 9/0081** (2013.01 - EP US); **F28F 3/02** (2013.01 - US); **F28F 3/04** (2013.01 - US); **F28F 3/048** (2013.01 - US); **F28F 3/06** (2013.01 - EP US); **F28F 3/08** (2013.01 - US); **F28F 3/12** (2013.01 - EP US); **F28F 9/02** (2013.01 - US); **F28F 21/08** (2013.01 - EP US); **F28F 21/084** (2013.01 - EP US); **H05K 7/20163** (2013.01 - US); **H05K 7/20254** (2013.01 - US); **B23K 2101/14** (2018.07 - US); **B23K 2103/10** (2018.07 - US); **F28F 21/085** (2013.01 - EP US); **F28F 2250/106** (2013.01 - US); **F28F 2255/00** (2013.01 - EP US); **F28F 2255/06** (2013.01 - US); **F28F 2275/04** (2013.01 - EP US)

Citation (examination)

US 5381859 A 19950117 - MINAKAMI KO [JP], et al

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

US 10766097 B2 20200908; **US 2018297144 A1 20181018**; EP 3610215 A1 20200219; EP 3610215 B1 20210616; WO 2018191017 A1 20181018

DOCDB simple family (application)

US 201715486724 A 20170413; EP 18720441 A 20180329; US 2018025003 W 20180329